Before the Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	ET Docket No. 03-104
Inquiry Regarding Carrier Current Systems, including Broadband Power Line Systems	)	

REQUEST TO ACCEPT LATE-FILED REPLY COMMENTS

The Chief Information Officer of the Federal Emergency Management Agency (FEMA), an organizational element of the Department of Homeland Security (DHS), respectfully requests the Federal Communications Commission to accept and consider the attached reply comments to the Notice of Inquiry published in the Federal Register on May 23, 2003 (68 FR 28182-28186) despite their lateness. The matters set forth in the comments are of great importance to the national public safety.

Respectfully submitted,

<signed>

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COMMENTS OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY ON BROADBAND OVER POWER LINES IMPLEMENTATION

The Chief Information Officer of the Federal Emergency Management Agency (FEMA), an organizational element of the Department of Homeland Security (DHS), respectfully submits comments below that relate to proposed Broadband over Power Line (BPL) implementation by way of modification to Part 15 of the Federal Communications Commission rules (47 CFR Part 15). FEMA has grave concerns regarding the interference that likely would be caused to Government communications by unlicensed BPL systems.

I. INTRODUCTION AND BACKGROUND

1. By design, BPL systems use radio frequency energy on unshielded, unbalanced transmission lines, resulting in the unavoidable radiation of RF energy. This unintentional radiation will create harmful interference to licensed radio services throughout the HF and lower VHF spectrum.

2. FEMA owns, operates, and maintains a very large high frequency radio system known as the FEMA National Radio System (FNARS). FNARS is the primary command and control backup communications media for this agency and interfaces with the other departments and agencies as specified in the Federal Response Plan [1] in furtherance of the purposes of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as

amended (42 U.S.C. §5121 *et sequentia*) and the Department of Homeland Security Act of 2002, Public Law No. 107-296.

3. FNARS is used to communicate with disaster response elements at the federal, state, and local levels. The federal government relies on FNARS for communications, both for natural and man-made disasters. The safety, health and welfare of our citizenry are directly tied to the successful execution of our communications programs. FNARS directly supports the federal Continuity of Government (COG) and Continuity of Operations programs (COOP) as required by Executive Order and various Presidential Decision Directives.[2] FNARS is essential to other federal departments and agencies in terms of fulfilling their respective national security and emergency preparedness (NS/EP) responsibilities.

4. FEMA has concluded that introduction of unwanted interference from the implementation of BPL technology into the high frequency radio spectrum will result in significant detriments to the operation of FEMA radio systems such as FNARS.

III. DISCUSSION

5. As pointed out in numerous stories and reports from countries where BPL implementations have been tested,[3] the unavoidable radiation from power lines and associated modems raises noise floor limits to an unacceptable level. This interference

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[1] Federal Response Plan, FEMA, April 1999 *et seq*.

[2] Federal Preparedness Circular, FPC 65, "Federal Executive Branch Continuity of Operations (COOP), July 26, 1999: Executive Order 12656, "Assignment Of Emergency Preparedness Responsibilities": Presidential Decision Directive, PDD 39 "U.S. Policy on Counterterrorism"; PDD 62 "Combating Terrorism"; PDD63, "Protecting America's Critical Infrastructures"; PDD 67, "Enduring Constitutional Government and Continuity of Government Operations"

[3] *See* Gerhard Latzin, "PLC for the present rejected by Finnish Telecommunication Minister", 25 May 2001, published on the Internet at http://www.darc.de/referate/emv/plc/plc-oh.pdf; Ministry of Public Management, Home Affairs, Posts and Telecommunications, Japan," Announcement of report by Power Line Communication Study Group" 9 August 2002, published on the Internet at http://www.soumu.go.jp/joho_tsusin/eng/Releases/Telecommunications/news020809_3.html; Koos Fockens, "PLC Measurements", 7 May 2002, published on the Internet at http://www.darc.de/referate/emv/plc/VERON_PLC_Report.pdf; Mel Maundrell, "Concerns for the

will severely impair FEMA's mission-essential HF radio operations in areas serviced by BPL technology. Tests have shown that in order for licensed transmitters to compensate for this noise level, there would have to be an increase in the signal level on the order of +30dB [2].

6. FNARS utilizes transmitters that range from 1 kW to 10 kW in output power. An increase in power of +30 dB to offset the increased noise floor would require a 10 kW station to increase power output to 1 MW. The maximum HF power level that the National Telecommunications and Information Administration (NTIA) will authorize is 10 kW for emergency operations, and only 3 kW for normal operations. Thus, the +30 dB increase is far beyond the level authorized by the NTIA and FNARS will not be able to compete with the encroachment of signals produced by BPL technology and devices.

7. FNARS is designed to provide a defined level of performance in communications using current the authorized and licensed power levels, while expecting existing interference from known licensed and unlicensed devices. Any implementation of increased power for FNARS is undesirable and is unnecessary under existing circumstances. A power increase in the order of magnitude required to offset the BPL systems, however, would require acquisition of new transmitter equipment and antenna systems designed for these power increases, and would also present significant safety problems to personnel. Solving these problems would require a considerably higher budget for FNARS and result in unnecessary extra costs to the Government.

8. Aeronautical Radio, Inc. ("ARINC"), incorporated in 1929, is widely considered to be an industry expert in high frequency radio aviation communications. We concur with ARINC's position in its reply comments that there is a negative impact on safety of

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continued Military Use of HF over the Potential Increases to the Background Noise Level", 11 January

personnel relying on communications in the frequency range proposed by BPL technology. ARINC noted "the threat of BPLC networks to radio communications is very real and that stringent limits on radiated emissions are necessary to preserve existing licensed HF service."

9. FNARS radio operators normally conduct communications with signals that are barely above the ambient noise levels. The ambient noise level at the receiver is thus the determining factor as to whether stations can communicate. FEMA believes and recommends that Part 15 of the FCC rules and regulations should be strengthened to ensure that there will be no increase in interference levels to existing communications systems which are licensed by the FCC or authorized by the NTIA. FEMA believes the FCC should not take actions that would result in any increase in the noise floor in the HF radio spectrum, because any noise increase inevitably would diminish the ability to maintain essential communications. This loss of communication would directly impair the safety of life and property. Currently, there is no alternative to HF radio communications in terms of meeting national security and emergency preparedness requirements at the national, state and local levels.

10. FNARS HF radio stations are normally located in residential areas that would be serviced by Power Line Communication (PLC) systems. FEMA also utilizes HF radio stations from other Government programs, including the Military Affiliate Radio System (MARS), the US Air Force Auxiliary - Civil Air Patrol (CAP), and the Radio Amateur Civil Emergency Service (RACES), which are similarly situated. The interference from PLC would render these essential communications services useless.

2002, published on the Internet at http://www.radio.gov.uk/topics/interference/documents/dera.pdf

11. In radio frequency interference situations, there is a reciprocal condition present—i.e., a system that exhibits unintentional radiation is also susceptible to the incursion of unwanted signals. FEMA's receivers will inevitably suffer interference from BPL radiation, and BPL users will experience service interruption when FEMA's transmitters overpower the signal levels expected by BPL modems. To illustrate this point, we quote from an analysis by Mr. Ed Hare[4]:

> "The total power of their [BPL systems] signal inside the line is going to be about 10 milliwatts, and when we transmit, PLC wiring may pick up 4 watts of our power right inside the frequencies PLC is using. It is unlikely that PLC systems will continue to function in the presence of these signal levels."

12. When interference from BPL systems occurs, which FEMA believes would be the result if the FCC adopts the proposal, questions will arise concerning how resulting interference problems are to be resolved, and by whom. FEMA believes the licensed radio services will be perceived by consumers as responsible for the interference, since most consumers do not understand that their unlicensed Part 15 devices "must accept any interference received, including interference that may cause undesired operation".[5]

IV. SUMMARY

The HF spectrum is a unique resource for survivable, long-distance fixed and transportable communications that are independent of fragile infrastructure. Other communications media cannot meet FEMA's requirements for disaster response and other mission-critical communications. Other users of the HF spectrum are similarly affected by the proposal, and only HF radio can meet their needs as well. Implementation of BPL under the present or relaxed emission restrictions would make HF radio unusable, depriving our nation of an invaluable and irreplaceable public safety

[4] *See* Ed Hare, "Interference to PLC systems from Amateur Radio Operation", 14 April 2003, published on the Internet at http://www.arrl.org/tis/info/HTML/plc/files/Interference_to_PLC.htm

resource. The purported benefits of BPL in terms of expanded services in certain communications sectors do not appear to outweigh the benefit to the overall public of HF radio capability as presently used by Government, broadcasting, and public safety users.

Respectfully submitted,

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By: _____<signed>_____
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[5] *See* 47 CFR § 15.19